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AUTHOR Leslie, Larry L.
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ABSTRACT

Assessed are the consequences of direct aid to students in private higher education. Three levels of evidence are proposed to show that student aid is in fact aiding the private sector: (1) time series, national and selected state enrollment data disaggregated by sector, juxtaposed with time series national and state student aid data; (2) attendance patterns of aid recipients in comparison with patterns of norm groups; and (3) data showing intersectorial enrollment shifts directly attributable to the award of student aid. The analysis is presented for the informed policy maker and analyst. (Author/MSE)

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Topical Paper No. 10

THE ROLE OF PUBLIC STUDENT AID IN FINANCING PRIVATE HIGHER EDUCATION

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THE ROLE OF PUBLIC STUDENT AID IN FINANCING PRIVATE HIGHER EDUCATION

by

Larry L. Leslie
Professor of Higher Education
University of Arizona

Higher Education Program
College of Education
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THE ROLE OF PUBLIC STUDENT AID IN FINANCING PRIVATE HIGHER EDUCATION

The purpose of this paper is to assess the consequences of one of several alternatives for providing financial assistance to independent, or private, colleges and universities in America. The strategy examined herein is the channeling of public assistance to private institutions through students, or more specifically, *student aid.*[1]

The target audience of this paper is the informed policy maker and analyst. Thus, it is assumed that the reader is generally familiar with (1) the present and projected general financial condition of private higher education, (2) the present political sentiment nationally and within most states for aiding private institutions financially, (3) the general alternatives (e.g., student aid, institutional aid) available to the policy makers, and (4) the alternatives available *within* the student aid strategy (e.g., grants, loans, work-study). Further, some reader familiarity with the history of policy development in the area of higher education financing is assumed, particularly in regard to the preeminent role that has been assigned to student aid in the overall national reform of postsecondary financing.[2]

The analysis will be presented in three parts, organized in ascending order of the directness of the evidence that student aid is, in fact, aiding the private sector. Considered first will be time series, national and selected state enrollment data disaggregated by sector (public-private), juxtaposed with time series national and state student-aid data. The second level of evidence presented will be the attendance patterns of student-aid recipients in comparison to the patterns of appropriate norm groups. Third, and most directly connected with the role student aid is playing in affecting the financial condition of private institutions, will be data showing intersectoral enrollment shifts directly attributable to the award of student aid.

A final assumption must be interjected at this point because it is critical to the subsequent analysis. The assumption is that private institutions are able to

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[1] Excluded from the analysis are *non-student* vehicles, such as general institutional aid; *non-public* resources, such as institutional student aid; and *non-student aid* vehicles, such as various forms of tax allowances. Tax allowances are clearly forms of aid to students, but typically are not defined literally as student aid. For a discussion of the role tax allowances can play in the financial support of private institutions, see Leslie, "Higher Education Tax Allowances: An Analysis," pp. 497-552.

[2] See, for example, the Carnegie Commission on Higher Education, *Higher Education: Who Pays? Who Benefits? Who Should Pay?* and the Committee for Economic Development, *The Management and Financing of Colleges.*

translate enrollment gains into financial gains. This assumption can, of course, only be fully tested on an institution-by-institution basis; nevertheless, several generalizations supporting the assumption seem to be well grounded when institutions are examined in two categories of institutional size.

In the case of private institutions of less than optimum size, a net financial gain from the enrollment of student-aid recipients generally can be expected.[3] As enrollments increase, these institutions can realize additional tuition income (which represents from about 75 to 90 percent of total institutional costs), often with only limited additional expenditures. Small enrollment increases may be accommodated with almost no expenditure increases as students are absorbed almost entirely into existing courses and programs. As enrollment increases become larger, some additional costs will be incurred, but certain economies of scale will be realized For example, although some crowded fields will require the hiring of additional instructors and construction of new facilities, part of the course loads of these new students will be spread over under-subscribed courses and program areas. Further, supporting services need not be expanded on a one-to-one basis; for example, an additional residence hall assistant may be required for each additional number of students admitted, but only one Vice President for Student Affairs is needed regardless of enrollment levels.

In the case of private institutions already at or in excess of optimum size, the financial gains from larger enrollments are less easily demonstrated. In some cases, marginal costs may exceed marginal benefits. For these institutions, additional students are less easily absorbed into existing courses and services; and new students may result in higher overall units costs. On the other hand, an institution of optimum size has the option of responding to increased student demand by raising its prices (e.g., tuition). If demand is in excess of supply (that is, if more students desire admission than there are spaces available), the institution can raise prices without fear of net enrollment losses. Thus the institution can realize a higher income per student enrolled, at least for the short term.

In both of these institutional-size categories, certain potential costs of enrolling student-aid recipients exist and must be factored into the discussion. First, since tuition incomes represent less than total educational costs, each additional student admitted represents a potential dollar *loss* to the institution unless marginal costs are kept considerably lower than average costs. Marginal

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[3] "Less than optimum size" institutions are those that can realize further economies of scale within the constraints of their institutional missions. For most liberal arts colleges, the optimum enrollment level would appear to be about 2,500-4,000 students, whereas for most universities the most efficient enrollment level appears to be about 10,000-12,000. (See Leslie, "The Issue of Institutional Size.")

income (per new student) must *exceed* marginal cost by at least 10 to 25 percent, for the institution to break even.

Second, average costs per publicly-aided student are probably higher than for other students because the former are more likely to require special counseling, remedial courses, special programs (e.g., Minority Studies), and perhaps more importantly, large amounts of institutional student aid. They are, on the other hand, less likely to enroll in the more costly disciplines, e.g., laboratory sciences and engineering. On the balance, these factors probably add substantially to the marginal costs of enrolling recipients of public student aid.

In sum, it may be said that increased enrollment demand *potentially* contributes to the financial well-being of private colleges and universities. However, whether this potential is realized and the degree to which it is realized will be largely a function of the quality of institutional management. The degree to which institutional decision makers can resist the temptation to expand course offerings, programs, and services as additional tuition revenues become available will determine to a considerable extent the financial benefits of increased enrollments.

A FRAMEWORK

The fundamental assumption of this paper is that demand theory applies to higher education.[4] This theory suggests that the quantity of a product or service purchased will vary with (1) price, (2) the buyer's income, (3) the prices of other goods or services, and (4) the buyer's tastes or preferences (Stigler, pp. 22-40). Thus, simply put, it is expected that enrollment in higher education in general, will increase as the student's net price is reduced through the award of student aid. It would be expected that private institutions would share in the benefits of this general net price reduction.

Further, to the extent that the amount of aid awarded is related to the price of attendance, private institutions would benefit even more. This is because *cross demand* operates in higher education, e.g., the demand for a commodity varies as the prices of rival commodities vary. In other words, as the net price of private higher education is reduced and moves closer to the price of public higher education, demand for the former (i.e., enrollment) increases. Thus, from these two outcomes of student aid–general price reductions and greater reductions in the private sector –it would be expected that enrollments in private

[4] For a summary of research supporting this assumption, see Gregory A. Jackson and George B. Weathersby "Individual Demand for Higher Education: A Review and Analysis of Recent Empirical Studies" (Cambridge, Mass.: Harvard University Graduate School of Education, 1974), mimeographed.

higher education would be increased over otherwise existing levels. The magnitude of these increases answers the question implicitly suggested by the title of this paper: what is the role of public student aid in the financing of private higher education?

ANALYSIS

When questions are raised regarding the expected impact of public programs of student assistance upon private institutions, a common reaction is that the amount of assistance (aid) per student is too small to cause enrollment shifts to the private sector.[5] Such notions, however, are erroneous because they tend to be based only upon a consideration of the new entrant into the market, i.e., the student who would not have attended college anywhere without the aid. Whereas it is undoubtedly true that new entrants are more likely to attend public institutions, the market for private institutions must be viewed more broadly in marginal terms. Figure 1 illustrates this principle.

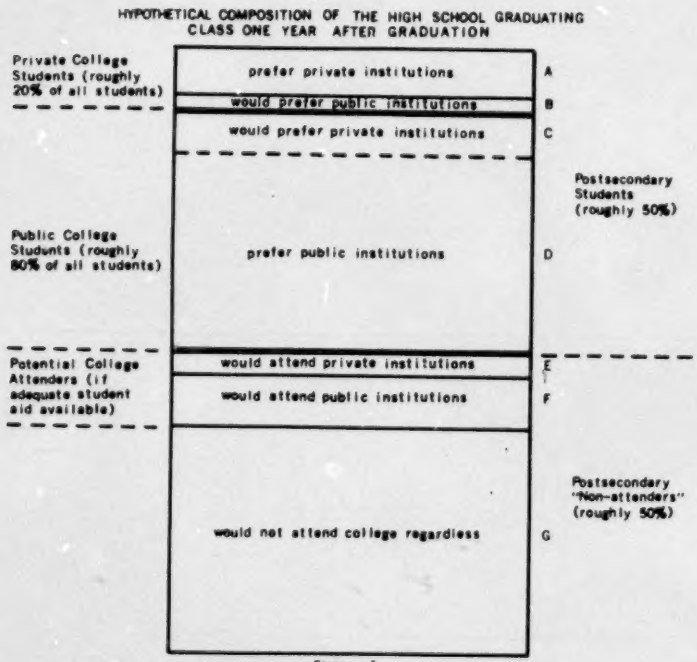

Figure 1

[5] For example, a common argument heard in the 1977 Senate-House Conference Committee on the proposed tax credit legislation was that the $100-$250 higher education tax credit of the Roth Amendment would aid public rather than private institutions because these amounts were only adequate to pay a significant part of *public* college tuitions.

Any group of potential college attenders can be thought of as being composed of a number of subgroups, some of whose members would change their attendance behavior if varying amounts of student aid were made available. In Figure 1, private institution enrollments hypothetically could be expanded to include A + C + E - B.

Subgroup C could well be a rather large potential source of private college students because it contains many upper- and middle-income students who may have been attracted in recent years away from expensive private colleges to lower cost public institutions. From theory, it would have been expected that as the American middle class expanded in the past decade, *ceteris paribus*, the demand for private higher education would have increased considerably. Instead the private share of the higher education market has decreased rather markedly.[6] This suggests a possible pent-up demand for private higher education, and the possibility of an increased potential demand in the future, should the public-private price gap be reduced.

The Relationship of Private College Enrollments to Public Expenditures for Student Aid

The least direct level of evidence regarding the impact of student aid in affecting private college enrollments is the simple relationship of these enrollments to trends in public expenditures for student aid. Although this level of evidence cannot be considered conclusive, these data nevertheless are suggestive.

Tables 1 and 2 contain the basic national data allowing examination of this relationship between enrollments and aid; and the relationship is expressed graphically in Figures 2-4. Figure 2 shows the pattern of private college enrollments plotted against public expenditures for student aid. Assuming that a time lag exists between growth in student-aid expenditures and private enrollments,[7] it appears that the rapid expansion of student-aid programs was related positively to the resumption of the private enrollment growth in 1974 and 1975. The rate of growth in private enrollments began to diminish in about 1967 and almost completely leveled off from 1970-73. However, in 1974 and 1975 the rate of growth resumed.

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[6] The absolute number of private enrollments has grown modestly during the past decade.

[7] If one assumes that adequate dissemination of information regarding the availability of student aid requires about two years and that four years are required before all students, freshmen through seniors, are affected by a program, this lagged relationship of private enrollments to student aid availability appears plausible. (Note: Data are not lagged in Figure 2.)

Table 1

OPENING FALL DEGREE CREDIT ENROLLMENTS, BY CONTROL, 1965-1975

Year	Number			Percent Distribution		Decrease Share (%)	Annual % Change
	Total	Public	Private	Public	Private	Private	Private
1965	5,570,271	3,654,578	1,915,693	65.6	34.4	1.3	
1966	5,928,000	3,940,000	1,988,000	66.5	33.5	0.9	3.8
1967	6,406,000	4,360,000	2,046,000	68.1	31.9	1.6	2.9
1968	6,983,093	4,928,320	2,054,773	70.6	29.4	2.5	0.4
1969	7,542,992	5,454,990	2,087,993	72.3	27.7	1.7	1.6
1970	7,985,532	5,845,032	2,140,500	73.2	26.8	0.9	2.5
1971	8,188,169	6,059,939	2,128,180	74.0	26.0	0.8	-0.6
1972	8,341,919	6,207,134	2,134,785	74.4	25.6	0.4	0.3
1973	8,602,153	6,442,084	2,160,069	74.9	25.1	0.5	1.2
1974	9,109,883	6,891,422	2,218,461	75.6	24.4	0.7	2.7
1975	9,420,000	7,174,000	2,246,000	76.2	23.8	0.6	1.2

Source: American Council on Education, A Fact Book on Higher Education, Charles Andersen, Editor, 1975-1

Table 2

PUBLIC APPROPRIATIONS FOR STUDENT AID IN MILLIONS OF CURRENT DOLLARS
FISCAL YEARS 1965-1976

Year	Federal Veteran's Benefits	Social Security Benefits	Other Federal Student Aid Programs[1]	State Student Aid Programs	Total	Annual Growth Total
1965	9		56	72	137	137
1966		207	167	96[e]	470	333
1967	216	256	292	124	888	418
1968	335	305	321	159[e]	1,120	232
1969	432	366	341	200	1,339	219
1970	665	401	392	236	1,694	355
1971	1,117	455	490	269	2,331	637
1972	1,482	521	860	316	3,179	848
1973	2,016	638	895	364	3,913	734
1974	2,452	717	1,256[2]	441	4,836	923
1975	2,642	856	2,091[2]	510	6,099	1,263
1976	3,075	869[e]	2,953	645	7,542	1,443

[1] Includes BEOGs, SEOGs, CWS. SSIGs, interest on Insured Loans, and defaults on Insured Loans. (Supplemental appropriations included.)

[2] $171 million appropriated for BEOGs in 1974 spent in 1975.

e estimated

Note: Most student aid funds are forward funded to the next academic year.

Sources: All Federal data, and state data for 1965 from U. S. National Center for Educational Statistics: *Financial Statistics of Institutions of Higher Education: Current Funds Revenues and Expenditures*, Washington, D. C., annual. State data for 1970-75 from Joseph Boyd, *Annual Report of State Scholarship and Grant Programs*, Illinois State Scholarship Commission, annual. Post 1975 data derived from *Summary Analysis of Fy '77 Budget*.

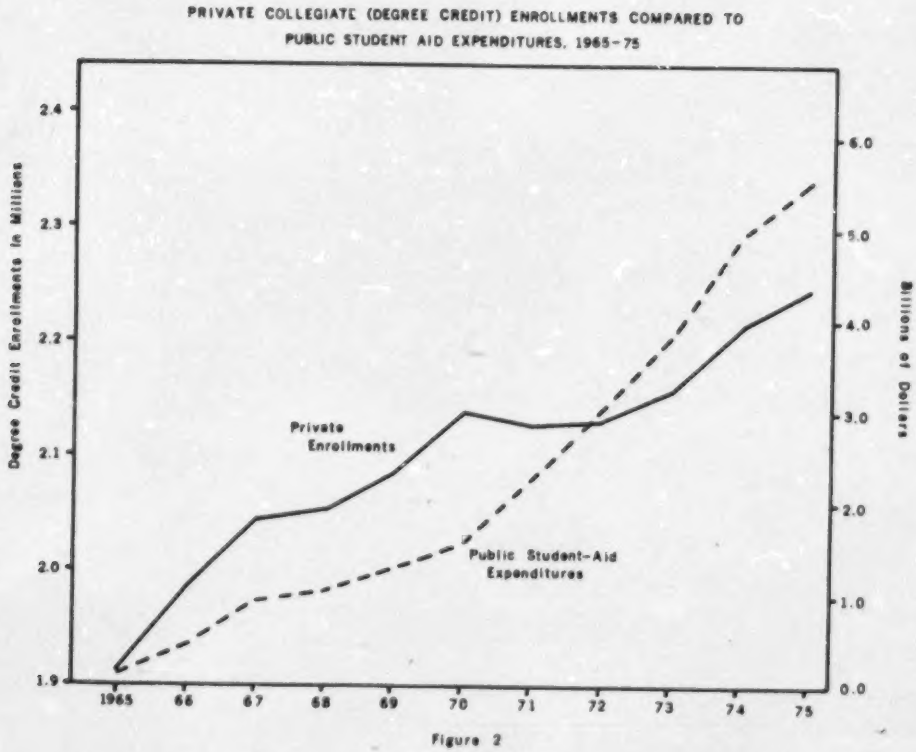

Figure 2

Figure 3 provides a different view of what has been happening to private college enrollments. This figure takes into account the overall growth in higher education enrollments and shows the decline in the private sector's enrollment share during this period. The figure is for degree-credit enrollments and suggests that the rate of decline (the slope of the line) in private enrollments may be related to growth in public student-aid expenditures. The slowing of the steep decline in the private share of postsecondary enrollments in about 1969 coincides with the beginning of the rapid growth in student-aid expenditures. If

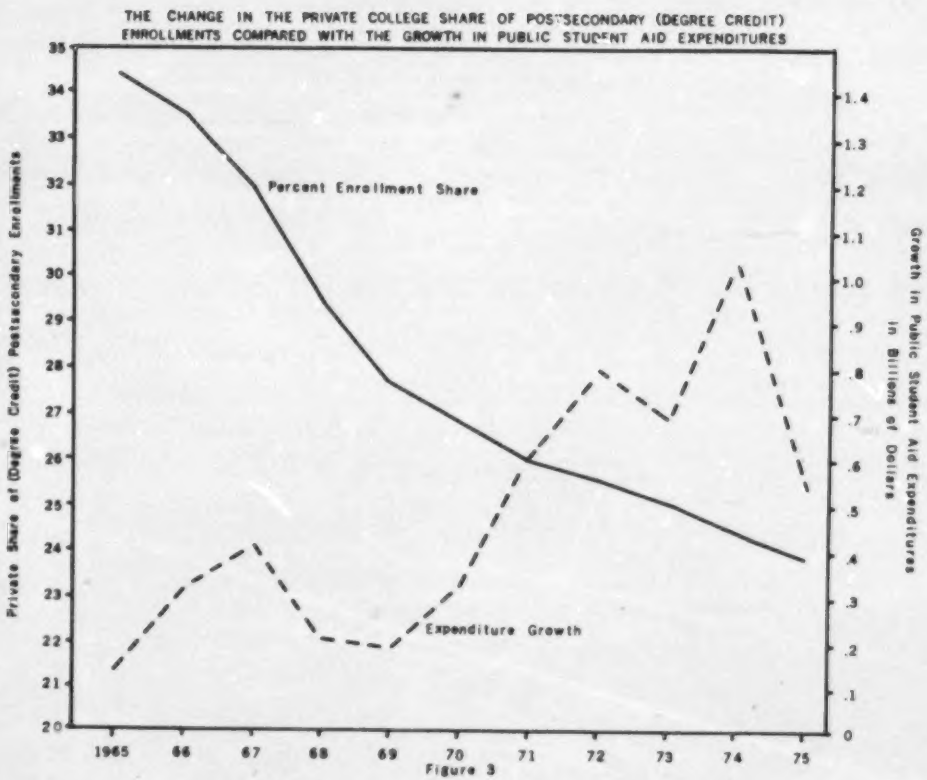

Figure 3

a two-year lag is again assumed (data in the figure are not lagged), the 1969 expenditure rise is associated with a further slowing of the decline in 1971. Figure 4 presents this same relationship from a slightly different perspective: here the annual percentage change in private enrollments is plotted against public student-aid expenditures in billions of dollars. The percentage of annual enrollment growth between 1971 and 1975 shows a strong relationship to dollar growth in public expenditures for student aid.

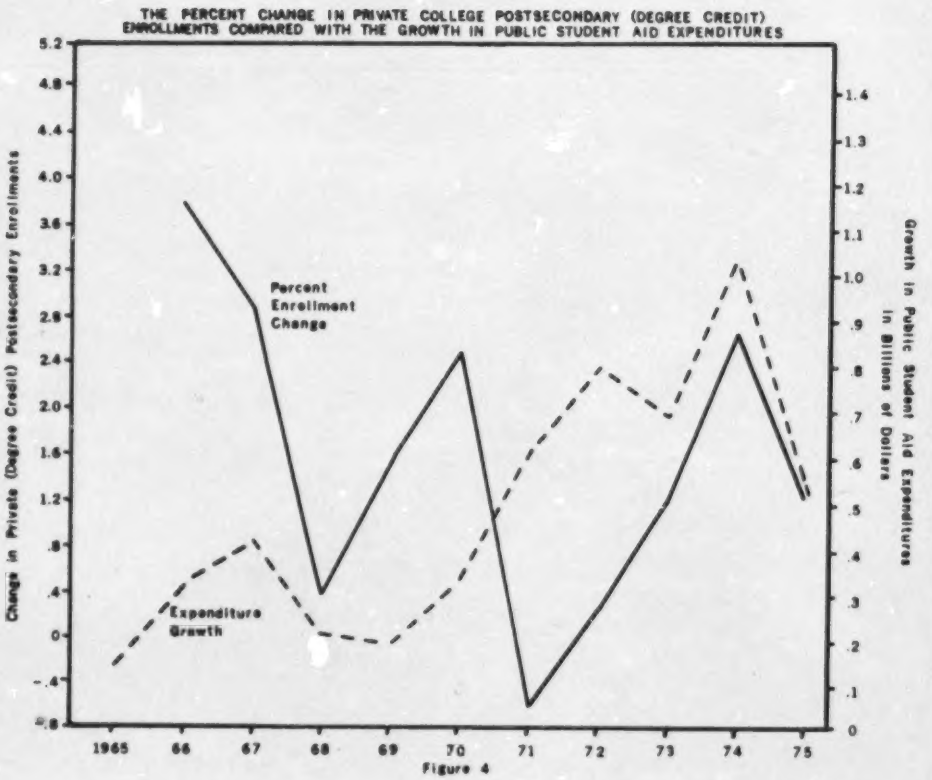

Figure 4

Figure 5 gives yet another perspective of the relationship between private enrollments and public student-aid expenditures. Here the rate of annual decline in private enrollments is plotted against the student-aid growth. It is seen that in 1968 the rate of decline in the private sector share slowed markedly, and essentially stabilized after 1970. In 1969, and more noticeably in 1970, student-aid expenditures accelerated. Thus, these two curves appear to change in temporal relation to each other.

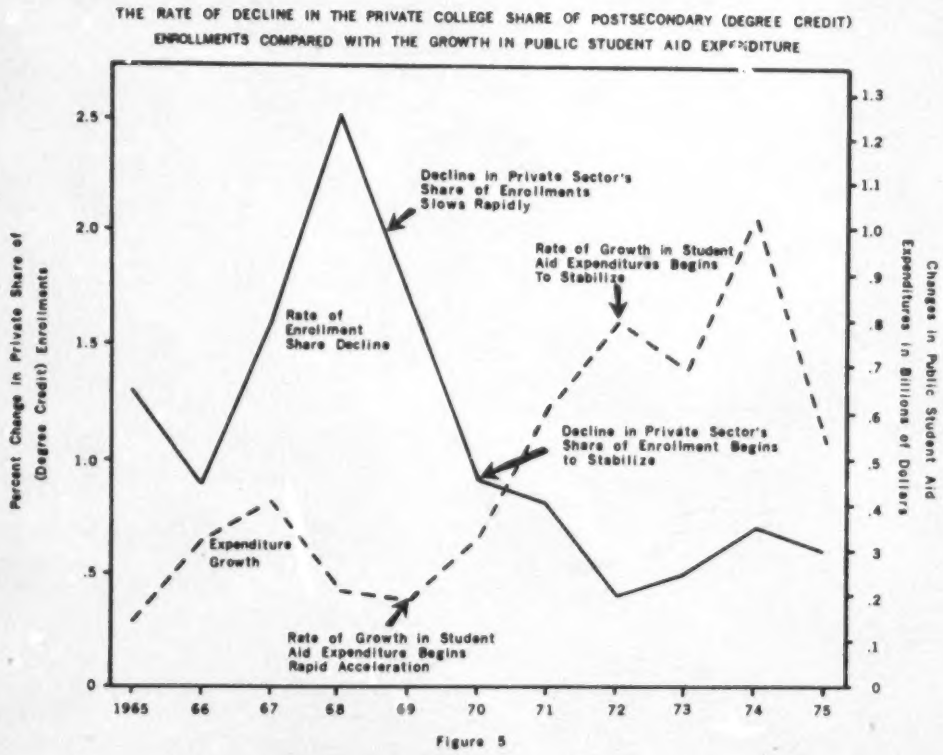

Figure 5

A more sensitive measure of the enrollment-aid relationship would be on a state-by-state basis because both student-aid expenditures and private college enrollments vary markedly.[8] Although such an analysis is beyond the scope of this paper, some data for one state, Pennsylvania, are shown in Figure 6. Only appropriations of the Pennsylvania Higher Education Assistance Agency

[8] The private sector is very small in some states and very large in others, with all gradations between. If all states are considered together, the effects of student aid on private college enrollments are spread over the full range of states, and the resulting effect on enrollments is really an *average* effect that is overstated in some states and understated in others.

(PHEAA) are plotted over time, but the same pattern as presented in Figures 2-5 holds. Growth in PHEAA appropriations is related to a later (lagged) leveling in the decline of the private sector share of Pennsylvania postsecondary enrollments.

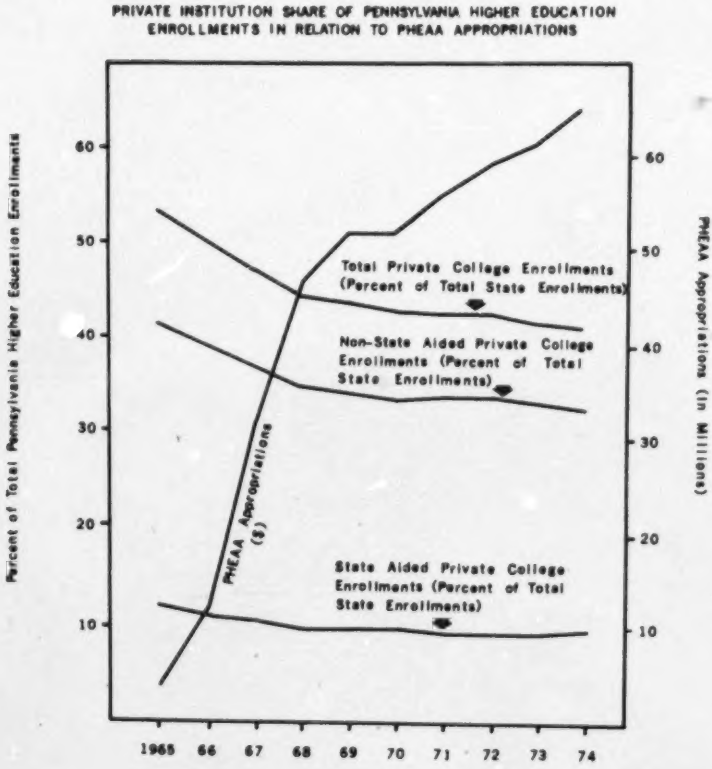
PRIVATE INSTITUTION SHARE OF PENNSYLVANIA HIGHER EDUCATION ENROLLMENTS IN RELATION TO PHEAA APPROPRIATIONS
Percent of Total Pennsylvania Higher Education Enrollments
PHEAA Appropriations (In Millions)
60
50
40
30
20
10
Total Private College Enrollments (Percent of Total State Enrollments)
Non-State Aided Private College Enrollments (Percent of Total State Enrollments)
State Aided Private College Enrollments (Percent of Total State Enrollments)
PHEAA Appropriations ($)
1965 66 67 68 69 70 71 72 73 74

Figure 6

In sum, these data are suggestive and point to a relationship between student-aid expenditures and private college enrollments. Conclusions, however, are not justified from these data because numerous other variables, in addition to student aid, could well be responsible for the pattern of private enrollments.

Attendance Patterns of Aid Recipients in Comparison to Non-Recipients

The major shortcoming of the second level of analysis, which compares the attendance pattern of aid recipients and non-recipients, is that one cannot be sure whether aid recipients would have attended public or private institutions if aid had not been awarded. That is, there is little reason to expect that aid recipients would have sorted themselves among public and private colleges in a manner similar to non-recipients even if aid were not awarded. In other words, a *control* problem exists in identifying suitable norm groups. Therefore, conclusions from this analysis level, too, are tenuous.

Fortunately, inherent errors in the comparisons of enrollment patterns of recipients and non-recipients should lead to conservative conclusions. Aid recipients tend to be needy and needy persons (in the absence of aid) tend to attend private colleges in relatively small numbers. Non-recipients tend to be less needy and the less-needy tend to be overrepresented in private colleges. Thus comparisons of the attendance pattern of recipients and non-recipients should result in an *under*-estimation of the effects of student aid upon private college enrollments because of differing *starting points*, or different natural inclinations of the two groups.

National Data

The National Longitudinal Study (NLS) sampled 18,000 high school seniors in 1,200 randomly selected public and non-public schools within the fifty states and the District of Columbia. The sample of schools was stratified according to six broad variables and appears to be representative of schools nationally. The first follow-up study conducted one and one-half years after graduation found that 10,189 respondents were enrolled full time during the 1972-73 academic year ("The Distribution").

Tables 3 and 4 show that private institution students benefit proportionately more from aid programs than do public institution students. This is especially clear in the case of four-year private institutions (this category includes universities). Whereas 21.7 percent of all respondents were enrolled in private four-year institutions, 26.8 percent of all student-aid recipients and 33.7 percent of the federal student-aid recipients were so enrolled (see Table 3). Finally, the form of aid received by private college students tended to be the more desirable grant aid as opposed to loans and work-study.

Table 3

DISTRIBUTION OF 1972-73 FULL-TIME FRESHMAN STUDENT FINANCIAL AID RECIPIENTS

Student Characteristics	Percent Distribution						
	Total Full-Time Students	Students Receiving Aid From Any Source	Students Receiving Federal Aid	Students Receiving Federal Aid[1]			
				Grant	College Work-Study	Loan	Transfer Benefits
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SES QUARTILE	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Highest	27.0	19.7	18.0	24.7	13.5	14.1	15.7
Third	25.7	24.5	22.3	23.2	16.0	22.0	24.1
Second	23.5	26.3	26.6	22.9	26.7	29.4	26.4
Lowest	23.8	29.5	33.1	29.3	43.9	34.6	33.8
RACIAL/ETHNIC GROUP	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	88.6	86.6	83.3	84.6	74.3	81.7	88.7
Black	8.7	10.2	13.0	12.2	21.3	14.6	8.9
Hispanic	2.7	3.2	3.7	3.2	4.4	3.7	2.4
ACHIEVEMENT/ABILITY QUARTILE	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Highest	21.3	26.9	27.8	41.7	25.9	26.4	20.2
Third	31.2	32.3	33.0	31.7	36.1	34.6	28.4
Second	23.2	21.5	20.4	15.7	20.6	20.6	24.4
Lowest	24.2	19.2	18.8	10.8	17.4	18.5	26.9
INSTITUTION TYPE	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Public 4	43.3	42.7	41.6	36.2	36.6	42.4	41.6
Public 2	27.7	23.1	17.2	11.3	22.5	9.3	34.8
Private 4	21.7	26.8	33.7	48.6	34.5	38.8	17.5
Private 2	2.3	2.2	2.2	2.2	2.5	1.9	2.0
Vocational	1.7	1.2	0.7	.2	1.0	.4	1.7
Other/Proprietary	3.3	3.9	4.5	1.5	2.9	7.1	2.5

Source: Base Year and First Follow-up Surveys of the National Longitudinal Study of the High School Class of 1972 (NCES, 1975).

[1]Based on duplicated count. Student may have received more than one type of Federal aid.

Table 4

AVERAGE AMOUNTS OF AID RECEIVED BY 1972-73 FULL-TIME FRESHMAN STUDENT FINANCIAL AID RECIPIENTS

Student Characteristics	Total Full-Time Students	Students Receiving Federal Aid	Average Aid Amounts: Students Receiving Federal Aid[1] Grant	College Work-Study	Loan	Transfer Benefits
	(1)	(2)	(3)	(4)	(5)	(6)
ALL STUDENTS	$1,098	$1,069	$ 769	$477	$ 906	$ 888
SES QUARTILE						
Highest	1,065	1,156	869	468	986	1,201
Third	1,007	1,058	720	447	966	901
Second	1,108	1,070	765	475	908	864
Lowest	1,181	1,028	731	487	837	758
RACIAL/ETHNIC GROUP						
White	1,056	1,061	728	468	933	898
Black	1,422	1,192	1,065	518	803	718
Hispanic	1,121	841	701	406	782	510
ACHIEVEMENT/ABILITY QUARTILE						
Highest	1,171	1,083	783	453	798	766
Third	1,085	1,069	779	465	888	894
Second	1,072	1,093	774	472	977	991
Lowest	964	1,007	615	502	1,031	792
INSTITUTION TYPE						
Public 4	960	921	618	481	784	934
Public 2	636	733	400	510	779	666
Private 4	1,703	1,400	982	441	938	1,139
Private 2	1,007	876	517	455	835	967
Vocational	672	654	600	684	546	416
Other/Proprietary	1,664	1,639	1,655	671	1,397	1,298

Source: Base Year and First Follow-up Surveys of the National Longitudinal Study of the High School Class of 1972 (NCES, 1975).

[1]Based on duplicated count. Student may have received more than one type of Federal aid.

One major exception to this pattern favoring private institution students is seen in the case of federal transfer benefits (Social Security survivor and VA war orphans' benefits). This deviation is significant because it speaks to the form of student aid that is most advantageous to the private sector. More will be said later regarding this point.

The Stanford Research Institute (SRI) study, *Student Aid: Descriptions and Options*, comes to the conclusion that public institutions fare better than private ones although the *data* are not irreconcilable with NLS data (Lee). The SRI findings were taken from several data bases and include all undergraduate students, not just freshmen. The form of the SRI data is in total dollars expended rather than in number of students aided and expenditure per student. Further, the SRI study focuses on the portion of *unmet need* which tends to be higher for students attending private institutions because of the higher costs.

Table 5

PERCENTAGE OF OFFICE OF EDUCATION AID DISTRIBUTION ($)
TO TYPES OF INSTITUTIONS 1972-1973

Type of Institution	SEOG	CWS	NDSL	GSL	BEOG	Overall Enrollments
Public four-year	50.1%	53.3%	50.7%	51.6%	39.3%	54.3%
Public two-year	13.0	17.9	6.4	22.0	35.0	20.1
Private four-year	34.9	26.3	40.9	24.5	18.5	24.1
Private two-year	2.0	2.5	1.9	1.9	7.2	1.5
Total[1]	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

[1]Rounded.

Source: Lee, Student Aid: Descriptions and Options, p. 53.

Table 5 shows that in all five tabled categories, private institutions received a larger share of federal student-aid appropriations than was represented by the private share of all full-time enrollments (about 25.6 percent).[9] Also, in four of five categories, the private *four-year* share was larger than expected. BEOGs, the fifth category, were in their first year, were open only to freshmen, and are seen largely as a basic *access* vehicle rather than an institutional *choice* program. As was the case in the NLS, the SRI found that the VA program favors public institutions (see Table 6).

[9]From Lee, Table 5, p. 17. This figure is not comparable to Table 1 data.

Table 6

ATTENDANCE OF GIs BY TYPE OF INSTITUTION

Institution	Percentage of Enrollment
Public	76%
Private	15
Proprietary	9
Total	100%

State Data

Data for five states provide a more sensitive assessment of the effects of student aid upon private enrollments because of the large and varied state grant programs in these five states. That is, the aid in these states is concentrated and is varied in form, thus allowing comparisons of the effects of different kinds of student-aid programs. These five states accounted for almost 70 percent of all state student aid in 1974-75 (see Table 7), as well as a high proportion of federal student-aid expenditures.

Table 7

MAJOR STATE PROGRAMS OF STUDENT AID

State	Recipients	Millions of Dollars	Percent[1]
New York	269,000	$108.5	23.73%
Pennsylvania	107,871	73.2	16.02
Illinois	90,000	63.2	13.84
California	47,320	41.1	8.99
New Jersey	48,508	27.6	6.04
	562,699	$313.6	68.62%

Source: Lee, p. 78.

[1]Portion of state student aid, appropriations in all states.

Table 8 compares the attendance patterns of state-aid recipients to overall state attendance figures. In five of the six states, the aid recipients were more likely than the norm group students to attend private colleges. In New York, where the difference was small, awards were made essentially to all postsecondary students and were perhaps too small to affect institutional choices; and in the one exception, Pennsylvania, unusually high public tuition rates probably explain, in large part, the small difference in private attendance rates among recipients and norm-group students.

Table 8

FIRST-TIME, FULL-TIME ENROLLMENTS COMPARED TO FIRST-TIME STATE AID RECIPIENTS WHO WERE ENROLLED FULL TIME BY SECTOR (PUBLIC OR PRIVATE)
(Percentages)

	N.Y. (SIA)	N.J. (TAG)	N.J. (Scholarship)	Calif.	Pa.	Ill.	Average[1]
Aid Recipients	64.5	2.5	56.9	58.3	59.1	55.2	56.4
Public First-Time Full-Time enrollment[2] norms	64.8	71.9	71.9	88.6	58.1	74.5	73.6
Aid Recipients	35.5	97.5	43.1	41.7	40.9	44.8	43.6
Private First-Time, Full-Time enrollment[2] norms	35.2	28.1	28.1	11.4	41.9	25.5	26.4

[1]Weighted by numbers of students in each state.

[2]Source: National Center for Educational Statistics, *Opening Fall Enrollment in Higher Education, 1973*, (George H. Wade), U. S. Department of Health, Education and Welfare. Washington: U. S. Government Printing Office, 1973; University and 4-year, 2-year, private and public raw data computed from Tables 17b (p. 396), 17c (p. 398), 17d (p. 400), 17j (p. 412), and 17e (p. 402), respectively.

Table 9 is useful for policy purposes because it contains descriptions of the six state programs in Table 8. Using this table in conjunction with Table 8, it is possible to gain insights into how public higher education agencies can structure their student-aid programs to optimize the amount of assistance directed to private colleges. As we said in the College Student Grant Study

> *It is instructive, in this regard, to examine differences by state, because some states are markedly more successful than others in raising the demand for private higher education. Two aid programs, the California Scholarships and the New Jersey Tuition Aid Programs, apparently set out in straightforward fashion to aid the private sector. Terms of their grant programs were obviously arranged for this purpose. As a result, the goal was met directly. The*

Table 9

COLLEGE STUDENT GRANT STUDY: SUMMARY OF STATE SCHOLARSHIP AND GRANT PROGRAMS EXAMINED
1971-72

	N.Y. (SIA)	N.J. (Scholarship)	N.J. (TAG)	California	Pennsylvania	Ill.
Need based only	Yes		Yes		Yes	
Competitive eligibility (Amount of award determined by need)		Yes		Yes		Yes
Maximum award	$600	2-Yr. college-$350 Others - $500	$1,000	Priv. $2,200 St. Univ. $600 St. Col. $160	$1,200 in-state $800 out of state	$1,200
% of tuition and fees	100% less $200	Tuition only; $500 max.	Tuition must exceed $450	100%	100%	100%
Out-of-State institution eligible	No	Yes-35% of total program	No	No	Yes	No
School eligible:						
2-Yr. private	Yes	Yes	Yes	Yes	In-state & Out-of-state	Yes
2-Yr. public	Yes	Yes	No	No	In-state Only	Yes
4-Yr. private	Yes	Yes	Yes	Yes	Yes	Yes
4-Yr. public	Yes	Yes	No because tuition under $450	Yes	Yes	Yes

Source: Joseph D. Boyd, 1973-74 Undergraduate Comprehensive State Scholarship/Grant Programs (Deerfield, Illinois: Illinois State Scholarship Commission, October 1973), p. 4.

other states, which are more neutral in their approach, did not forcibly direct their programs at the private sector and consequently a smaller percentage of their aid recipients were attracted to the private sector (Leslie and Fife).

Ascribed Significance of Student Aid to Private College Attendance

The third level of analysis involves the attempt to show the direct effects of student aid on decisions to attend private institutions. Data at this level concern the importance of aid in directly altering the attendance decision.

Although recent national data at this third level of analysis are generally lacking, a number of older and more limited studies allow a reasonably broad basis for making conclusions.[10] These studies have been integrated and analyzed by Daryl Carlson of the University of California at Davis (Carlson). Drawing upon studies of student-aid recipients by the Illinois State Scholarship Commission (ISSC), the Center for the Study of Higher Education at the Pennsylvania State University, the Bureau of Applied Social Research at Columbia University, and the Center for Social Research at the City University of New York, Carlson remarked on the consistency of the findings of these studies (Carlson, p. 30) and observed that private institution enrollments are proportionately more affected by student-aid programs than are public enrollments. Tables 10-13 show this latter point most clearly. Private colleges would have suffered the greatest enrollment losses if the various forms of student aid had not been awarded. For example, in the ISSC survey none of the public two-year students would have selected another institutional type if student aid had not been awarded, whereas only 40 percent of the private four-year enrollees would have retained their choice of institutional type. Even though these findings are hypothetical, being based solely on what students think they would have done without aid, the pattern and magnitude of findings, coupled with the findings of the first two levels of analysis, provide strong support for the thesis that student aid has a considerable impact on private sector enrollments.

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[10] The National Longitudinal Study of the High School Class of 1972—one of few recent national studies—has reported that the availability of student aid was very important to 28 percent and somewhat important to 31 percent of the study respondents in making their institutional choices. Analyses that would show the institutional (public-private) distribution of students responding in these various ways have not yet been completed.

Table 10[1]

PERCENTAGE OF AID RECIPIENTS WHO WOULD HAVE ATTENDED A DIFFERENT COLLEGE WITHOUT AID - ISSC SURVEY

Type of Institution Currently Attending	Type of Institution that Student Would Attend			
	Public 2 Year	Public 4 Year	Private 2 Year	Private 4 Year
Public 2 Year	100%	0%	0%	0%
Public 4 Year	12	88	0	0
Private 2 Year	50	0	25	25
Private 4 Year	18	42	0	40

Source: Illinois State Scholarship Commission 1970-71 survey of 1,294 ISSC student grant recipients.

[1]Tables 10-14 are from Daryl Carlson, "Student Price Response Coefficients for Grants, Loans, Work-study Aid, and Tuition Charges: An Analysis of Student Surveys"(1974).

Table 11

PERCENTAGE OF AID RECIPIENTS WHO WOULD HAVE ATTENDED A DIFFERENT COLLEGE WITHOUT AID - STATE SCHOLARSHIP SURVEY

Type of Institution Currently Attending	Type of Institution that Student Would Attend			
	Public 2 Year	Public 4 Year	Private 2 Year	Private 4 Year
Public 2 Year	87%	9%	0%	4%
Public 4 Year	13	85	1	2
Private 2 Year	10	10	70	10
Private 4 Year	14	30	1	55

Source: Pennsylvania State University 1971-72 survey of 3,110 State Scholarship recipients in California, New Jersey, New York, and Pennsylvania.

Table 12

PERCENTAGE OF AID RECIPIENTS WHO WOULD HAVE ATTENDED A DIFFERENT COLLEGE WITHOUT AID - EOG SURVEY

Type of Institution Currently Attending	Percent Attend Different College
Public 2 Year	7.1%
Public 4 Year	12.9
Public University	20.0
Private 2 Year	15.9
Private 4 Year	39.6
Private University	51.3
All	24.6%

Source: Columbia University 1969-70 national survey of 9,789 Educational Opportunity Grant recipients.

Table 13

PERCENTAGE OF AID RECIPIENTS WHO WOULD HAVE DONE SOMETHING DIFFERENT WITHOUT AID - CWS SURVEY

Activity Without Aid	Percent Responding
No Change	4.7%
Attend Same College Somehow	15.9
Look For Other Employment	53.8
Gone to Less Expensive School	6.9
Not Attend College	18.7

Source: Columbia University 1970-71 national survey of 8,172 College Work-Study participants.

In an effort to develop a standard base for viewing these studies, Carlson calculated student price response coefficients, which yield the percent enrollment gains per $100 of student aid. Table 14 compares the effects upon public and private enrollments of a tuition voucher plan, of grant programs with maximum income cutoffs and without such cutoffs, of a federal work-study program, and of a federal loan program.[11] It is seen that work-study and loan benefits to private colleges are roughly equal at each income level and are less than the benefits of tuition vouchers or grants. Further, private institutions almost without exception benefit more than public institutions per $100 of aid.

Table 14

DIRECT STUDENT PRICE RESPONSE COEFFICIENTS*

Institution Type	Family Income	Tuition	Grants		Work Study	Loans
			Max.	No-Max.		
Public	Low	2.45	2.17	2.14	0.99	1.17
	Middle	1.16	0.24	1.90	0.19	0.30
	High	0.87	--	0.62	0.02	0.03
Private	Low	4.28	3.40	2.40	2.00	1.88
	Middle	1.38	0.30	2.35	0.38	0.54
	High	0.73	--	1.98	0.04	0.08

*Table 14 should be interpreted as follows: The change in low income public enrollments per $100 tuition waiver is 2.45 percent compared to 4.28 percent in private colleges.

FURTHER ANALYSES, DISCUSSION, AND CONCLUSIONS

General Observations

The conclusion that student-aid programs enhance the enrollment levels of private colleges and universities and thus the financial health of most of these institutions seems inescapable from the analysis and data reported and reviewed herein. Further, the magnitude of the impact appears to be considerable although there is great variation by student aid form (e.g., loans and grants) and by the nature of aid programs even when the *form* of aid is identical (e.g., as in the California and New York grant programs).

Estimates of the magnitude of the impact of student aid upon private enrollments depend upon which of the three levels of analysis is employed.

[11] Table 14 should be interpreted as follows: For example, the change in low income public enrollments per $100 tuition waiver is 2.45 percent compared to 4.28 percent in private colleges.

Under the first level, a simple regression analysis reveals that since 1965 more than 82 percent of the variation in private enrollments, or about 271,000 student enrollments, are accounted for by variations in student-aid expenditures (see Table 15).

Table 15

REGRESSION ANALYSIS OF PRIVATE DEGREE CREDIT ENROLLMENTS IN RELATION TO PUBLIC STUDENT EXPENDITURES

	Absolute Private Enrollments and Student Aid Expend. (See Figure 2)	Private Share and Student Aid Growth (See Figure 3)	Private Share Decline and Student Aid Growth (See Figure 4)
Multiple R	.91584	.75088	.70073
R^2	.83877	.56382	.49102
Adjusted R^2	.82085	.51535	.43446
Standard Error	.04103	2.5421	.47778
F	46.82059	11.63350	8.68231
$F_{(.05)}$	4.84		

Under the second level, it was seen that student-aid recipients tended clearly to enroll in private colleges in greater numbers than would have been expected based upon appropriate enrollment norms. Utilizing the NLS data and applying the 1972 private attendance rates among aid recipients to post 1972 data, it is estimated roughly that the *over-enrollment*[12] in private colleges and universities attributable to student aid in all forms in 1975 was roughly 253,000 students.[13] The third level of analysis, which applies the same estimating techniques to NLS data in conjunction with a *plausible* overall student price

[12] *Over-enrollment* is the number in excess of the number corresponding to a private college enrollment share of 21.7 percent.

[13] This figure was calculated by multiplying the percent of all students receiving aid times total enrollments times the percent of recipients in private institutions, minus the percent of all students receiving aid times total enrollments times the percent of all students in private institutions.

These estimates are necessarily very rough because data bases are not comparable. For example, applying 1972 enrollment patterns to 1973-75 data results in conservative estimates because of post 1972 changes in the distribution of aid among programs and in award amounts. On the other hand, although graduate students are included in the enrollment figures, some aid programs are not open to graduate students—thus suggesting overly liberal estimates.

response coefficient of 2.00,[14] results in an estimated gain to the private sector of a comparable 252,000 students or more than 11 percent of total private enrollments in 1975-76.[15] Using the NLS data adjusted for institutional contributions to student aid, this gain translates into an overall public subsidy to the private sector of $1.262 billion and a *net* subsidy of almost $370,000,000 in 1975-76.[16] These enrollment and subsidy figures possibly provide the margin necessary for the survival of many private colleges.

Table 16

THE ESTIMATED NUMBER OF DEGREE CREDIT STUDENTS ADDED TO PRIVATE COLLEGIATE ENROLLMENTS AS A RESULT OF PUBLIC STUDENT AID PROGRAMS (1965-1975)

Analysis 1	Analysis 2	Analysis 3[1]
271,000[1]	253,000	252,000

[1]Based upon a Student Price Response Coefficient of 2.0

The Impact of Varying Forms of Student Aid on Private College Enrollments

There is almost as much variation among the forms of student aid as there is among the overall forms of public assistance to higher education. Some programs appear clearly to favor public institutions while others would seem to favor the private sector. Indeed, some student-aid forms have been structured in an obvious attempt to aid only one sector or the other.

Federal Forms

Federal transfer programs tend generally to benefit public institutions more than private ones. For example, beneficiaries of social security programs favor

[14]Estimated from values in Tables 3 and 14, and from sources listed in Table 2. The 1972-73 programs were heavily, though not entirely, low-income programs and were weighted slightly in the direction of work-study and loans, as opposed to grants. No adjustment was made for graduate student nor for student-aid program growth and its nature since 1972.

[15]This figure would appear to be somewhat higher than Weathersby's (1976, p. 120) estimate that $40,000 is required to cause each intersectoral student shift. Using the $40,000 figure, the present $6 billion public student-aid expenditure level would translate into a shift of 150,000 students. (See Weathersby.)

[16]The *net* subsidy is the more important figure because much of the overall subsidy merely replaces the private funds of those students who would attend private institutions even without aid.

public college attendance. This apparently is, in part, due to the *cost neutral* nature of transfer program benefits (that is, benefits are not tied to cost of attendance). Private colleges do not appear to get their *fair share* of GI Bill students either. From the SRI Study, it is seen that 81 percent of these students are enrolled in public colleges (p. 64). Because the amount of GI benefits is unrelated to the costs of attendance, this finding perhaps should not be surprising; however, it may be that this enrollment pattern is as much a function of a unique price sensitivity among the older, veteran population.

Grant programs seem clearly to be superior to work-study programs and loans in indirectly aiding private institutions, although like grants, both of these latter two forms are more beneficial to private than to public institutions.[17] Indeed, according to the NLS, almost half (48.6 percent) of all federal grant recipients are enrolled in private four-year institutions (where grant *amounts* are largest too.)[18] The varying advantages to private institutions of these three student-aid forms—grants, loans, and work-study—would appear to be a function of the extent to which dollar benefits are tied to the cost of attendance.

State Forms

In terms of the private versus public institutional benefit from student aid, it matters little which level of government, *per se* administers a particular student-aid program. The key is in the terms or conditions of the program. Thus, a state grant or loan program that is similar to a federal program is likely to have similar effects upon sector enrollments.

However, as shown, existing variations among state student-aid programs of a particular form (e.g., grant programs) result in widely disparate effects within the several states. The reason is that the entitlements and other regulations vary widely by state. For example, some states favor the private sector by tying the amount of the student's aid to tuition costs rather than to total educational costs. Indeed, one state program (the Tuition Aid Program in New Jersey) essentially eliminates the public sector by establishing a tuition minimum for eligibility. In its effect, such a program is little different from traditional institutional aid programs, except that the private, rather than the public sector, is aided.

Conclusion

Student-aid programs can be structured in ways to increase or decrease the advantage to the private sector. For example, state programs tend to be more advantageous to the private sector than are federal programs because the former

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[17] In all cases, conclusions are relative and are based upon the private sector share of degree-credit enrollments.

[18] The reader is reminded that the NLS sampled 1972-73 freshmen only.

often tie awards strictly to tuition levels, sometimes include scholarship features, and occasionally vary award maximums by institutional sector. These features could be extended in both state and federal programs, thereby increasing indirectly financial assistance to the private sector.

At the one extreme, programs that calculate student-aid award amounts without any consideration of educational costs will aid private colleges the least—but clearly more than conventional institutional aid which historically has been awarded to public institutions almost exclusively. At the other extreme are those programs that tie the amount of assistance to the most widely disparate of student charges. In most cases this will be tuition charges.

Within the constraints of existing student-aid programs, in most cases the higher the award maximum the greater the benefit to the private college. Beyond certain levels, the private college dollar gain from higher award maximums is on a dollar-for-dollar basis. This can be illustrated by reference to both federal and state programs. For example, the present BEOG maximum of one-half of costs to a limit of $1,400 results in little advantage to the private over the public college because average public college costs nationally are approaching the maximum *base* of $2,800 (2 x $1,400).[19] Indeed, in most states having large private sectors, the average public college cost is already at or in excess of $2,800. Thus, although average private costs may be much higher than public college costs, students at both sectors are eligible for the same maximum award. But as the BEOG maximum is raised to $1,800 by 1977-78, the size of the maximum grant in the private sector in many cases will be several hundred dollars higher than the maximum public grant, at least initially. This is because private costs (but not public costs) will equal or exceed the new maximum base of $3,600. Similarly, a maximum state tuition grant of $500 benefits the students of each sector equally if public tuitions are $500 or less, whereas a higher grant maximum benefits the private college student unless public tuitions are proportionately higher too. In each case, the magnitude of the effect upon enrollments can be estimated from the price response coefficients listed in Table 14.

Although the magnitude of the financial effects of public student-aid programs upon private institutions is open to challenge, the conclusion that the private sector gains significantly from these programs appears to be irrefutable. Further, conclusions regarding the most advantageous forms of these programs and some of the more advantageous stipulations of these forms also would seem to be defensible. In short, private institutions appear to have much to gain from the advocacy of public student-aid programs, especially if careful attention is given to the specific terms and conditions of student entitlements.

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[19] About $2,600 in 1975 for a resident student at a four-year public college. (The limit will probably have been raised to $1,600 by the publication date of this paper.)

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